White Paper to Inform the Five-Year Strategic Plan for Federal networking and Information Technology Research & Development Program

1. Previous Five-year Strategic Plan for NITRD's IT-R&D is unstructured. It looks like F&A-like address or comments. The part-to-part and section-to-section are loosely coupled. It looks not professional. Fortunately, the assessment report titled "Leadership under Challenge: Information technology R&D in Competitive World" can be used to serves as the background review and current-status of the IT R&D in USA. It provides useful information to design a state-infrastructure with a clear roadmap for the next IT- R&D. The strategic plan should be addressed clear to guide the accomplishment of measurable and tangible goals and aims. Such strategic plan must be engaged to "American Competitiveness Initiative" protected by American Competitiveness Act Bill, and referenced by recent summary titled "Rising above the Gathering Storm," from NAS, NAE, and Institute of Medicine. Therefore, the vision may be

   > "Construct an undefeatable US networking and information technology (NIT) for the nation towards the 21st. century development.

   Mission May be

   > "Assist the US government to coordinate with major federal agencies, to federate national resources, to strengthen national IT capacities, to initiate concrete programs, and to enhance the national IT-R&D for sustaining the global leadership in networking and information technology (NIT) for the nation's competitiveness (including nation's defense and security, economics blooming, health and environmental improvement, education fostering).

2. The NIT-R&D programs may be framed in to the following groups base don the priorities (none of the following challenges can be faced and solved without IT R&D efforts)
   a. National security and defense
   b. National healthcare
   c. Global environmental crisis
   d. Energy crisis
   e. National economy through information-driven intelligence and decision making in global economics and marketing
   f. Scientific discovery and high-end computing
   g. Education networking
   h. …

3. Technical implementation goals must be tangible and measurable.
   a. Multi-agency cooperative projects. NITRD services as a national coordinator and assessor.

b. Develop multiple layers networks (today's networking is a single layer and still regional based). It is extremely important to national security and homeland defense
c. Develop dedicated healthcare IT networking for cyber-medicine and cyber-health information systems (currently is organizational based). It impacts US healthcare system, such as tele-radiology, tele-medicine, virtual hospitals/clinics etc. The future health information systems in hospitals and clinics are absolutely based on the new IT infrastructure.
d. Develop region-to-region, state-to-state, and country-to-country networking and information to access environmental data, forecasting, disaster responding, and human life and property protections.
e. Crisis networking systems to handle any disasters (earthquake, tornado, global warming, flooding, etc), in case there is not power supplies, how can the information still networks for communications
f. Develop government sponsored public-private partnership networks for example, such systems allow provide intelligent mechanism embedded in the products for global economics. Such systems or products are not only IT software driven, but also networked. In way, it establishes networks between customers and enterprise for future decision making and knowledge, while interactively support customer needs without through regular computing systems. (That is can be called embedded computing in IT networks)
g. Continue to provide NIT R&D for unprecedented computing resources (High-end computing, and data intensive computing networks for scientific and engineering models and simulations and data intensive computing for discovery and innovative CAD designs, to sustain and grow US global competitiveness.
h. Promotion the network for enterprise software that should be highly emphasized. For example, how to oversee the data transfer in specific region or state or country? How to monitor the data transfer like traffic transportation or air flight monitor and management?
i. Develop educational networks, such as virtual schools for K12 education, college education, STEM promotion, cyber virtual museum and educational games.
j. Develop programs to conduct R&D results to practical technical transfers
k. In order to understand the global competitiveness, IT-R&D must have a project to conduct serious study and launch international collaborations with other countries' networks and protocol standards, global cooperation or international cooperative research without lose our strengths for competitiveness.